



Department of Electrical Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India

Prof. Mahesh Kumar
Electrical Engineering Department

Ref: No. IITM/MK/18-19/MSO

DATE: 19.3.2018

Due date : 9.4.2018

Dear Sir,

1. Quotations are invited in duplicate for the various items shown below/overleaf/enclosed list.
2. The **quotations are to be in two parts as Technical Offer and as Commercial offer**: The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in the one bigger envelope duly sealed and super scribed with reference number and due date and must be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. **Fax and Email quotation are not acceptable.**
4. Quotations should be valid for 60 days from the due date and period of delivery required , warranty terms etc. should also be clearly indicated. A minimum of one year warranty is required from the date of commissioning.
5. Imported supplies should be quoted **for CIF Madras.**
6. Local firms to quote for free delivery to this Institute. If quoted for Ex-Godown delivery charges be indicated separately.
7. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses. Compliancy certificate is to be provided indicating conformity to the technical specifications
8. Sales Tax/General Taxes/ED if applicable and such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession is given. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
12. The Guarantee period of the item may be indicated clearly.
13. In case of LC. Payment, 90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the equipment.
14. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.
15. **Acceptance and Rejection**:- I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

Yours faithfully,

Prof. Mahesh Kumar

Items required: **Mixed Signal Oscilloscope (MSO)** as per specifications enclosed.

Phone Nos.: (044) 2257 4429/ /5419 FAX: (044) 2257 4402, E-mail: mahesh@ee.iitm.ac.in



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Detailed Specifications:

General Features:

1. **Bandwidth:** 200MHz
2. **Analog channels:** 4 channels
3. **Vertical Resolution:** 8 bits (measurement resolution is 12 bits with averaging)
4. **Memory Depth:** Standard 4 Mpts
5. **Waveform updated rate:** > 1,000,000 waveforms per second
6. **Display:** 8.5-inch capacitive touch gesture-enabled display
7. **Acquisition System:** Maximum sampling rate 5GSa/s per Channel.
8. **DC vertical gain accuracy:** $\pm 2.0\%$ full scale
9. **DC vertical offset accuracy:** ± 0.1 div ± 2 mV $\pm 1\%$ of offset setting

A. Vertical System Digital Channels

1. **Digital input channels:** 16 digital channels
2. **Thresholds Selections:** TTL (+1.4 V), 5 V CMOS (+2.5 V), ECL (-1.3 V), user-definable ± 8.0 V in 10 mV steps
3. **Threshold accuracy:** $\pm (100$ mV + 3% of threshold setting)
4. **Maximum input voltage:** ± 40 V peak CAT I; transient overvoltage 800 Vpk
5. **Maximum input dynamic range:** ± 10 V about threshold
6. **Minimum voltage swing:** 500 mVpp
7. **Input impedance:** 1 M Ω $\pm 1\%$ (14 pF), 50 Ω $\pm 1.5\%$

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Vertical System Digital Channels:

Time Base Range: 2 ns/div to 50 s/div

Accuracy: ±1.6 ppm

Vertical System: Sensitivity: 1 mV/div to 5 V/div

Resolution: 1 bit

Trigger System: Modes: Normal, Auto, Single and Force

Types: Zone (HW zone qualifier), Edge, Edge then edge (B trigger), Pulse Width, Runt, Setup and hold, Rise/ Fall time, Nth edge burst, Pattern, Video, USB

Serial Data Trigger (optional): Enhanced Video, I²C, SPI, RS-232/422/485/UART, I²S, CAN, LIN, FlexRay.

Sensitivity: < 10 mV/div: Greater of 1 div or 5 mV; ≥ 10 mV/div: 0.6 div

Interface: One USB 2.0 hi-speed device port, Two USB 2.0 hi-speed host ports,

GPIB, LAN (10/100Base-T), WVGA video out

Probes: N2843A Passive probe 500 MHz 10:1 attenuation

Quotations may be sent by post/courier on or before 9th April ,2018 and must be addressed to :

Prof. Dr. Mahesh Kumar

Professor,

Dept of Electrical Engineering, IIT Madras,

Chennai 600 036.

Thanking you,
Yours Sincerely,

Phone Nos.: (044) 2257 4429/ /5419 FAX: (044) 2257 4402, E-mail: mahesh@ee. iitm.ac.in